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[Title of the Invention]: Optical Track Servo Type Magnetic Recording Method and Device

[Abstract]

[PROBLEM TO BE SOLVED] To provide, by means of a simple structure, a magnetic recording method and device capable of accurately writing digital signals corresponding to recording information at a predetermined spacing on a recording medium without requiring precise management of the relative speed between the recording medium and the head of a recording device,

[MEANS OF SOLVING THE PROBLEM] The magnetic recording device of the present invention is provided with an optical pickup 2 for detecting continuous optical track servo information on a recording medium, PLL circuits 6, 7, and 8 for generating clock signals synchronized to the output of the optical pickup 2, an encoding circuit 9 for encoding recording information supplied from a CPU 10 using this clock signal as a reference clock, and a magnetic head 12 for writing the encoded recording information on the recording medium.

[CLAIMS]

[Claim 1] A magnetic signal recording method characterized by, when recording digital signals corresponding to recording information on a recording medium, generating a clock signal from detection information of

contiguous optical signals stored on a recording medium, and generating drive signals for the recording head synchronized with this clock signal by encoding the recording information based on this clock signal.

[Claim 2] An optical track servo-type magnetic recording device comprising a detecting means for detecting continuous optical track servo information on a recording medium, means for generating clock signals synchronized with the output of the detecting means, means for encoding recording information using this clock signal as a reference clock, and a writing means for writing the encoded recording information on the recording medium.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001] The present invention relates to a magnetic recording method and device for recording digital signals on a recording medium.

[0002]

[DESCRIPTION OF THE RELATED ART] When recording digital signals on a recording medium, the relative speed between the recording medium and the head of the recording device must be managed. For example, art is known for controlling the rotational speed of a motor so as to attain a constant linear speed at the inner and outer circumference of a disk-like recording medium, as described in Japanese Patent No. S63-2167.

[0003]

[PROBLEM TO BE SOLVED BY THE INVENTION] When precisely managing the relative speed between the recording medium and the head of the recording device by controlling the rotational speed of a motor as described above, disadvantages arise inasmuch as the structures of the drive mechanism and drive control circuit become complicated, the

recording device becomes more complex, and the cost is increased.

[0004] An object of the present invention is to provide, by means of a simple structure, an optical track servo-type magnetic recording method and device that does not require precise management of the relative speed between the recording medium and the head of the recording device.

[0005]

[MEANS FOR SOLVING THE PROBLEM] The optical track servo-type magnetic recording method of the present invention is characterized by generating a reference clock signal from continuous optical signals stored on the recording medium when recording digital signals corresponding to recording information on a recording medium.

[0006] According to this recording method, a magnetic recording device having a simple structure and low cost can be provided without requiring precise management of the relative speed between the recording medium and the head of the recording device using a complex drive mechanism and drive control circuit.

[0007] The optical tract servo-type magnetic recording device of the present invention is provided with a detecting means for detecting continuous optical track servo information on a recording medium, means for generating clock signals synchronized with the output of the detecting means, means for encoding recording information using this clock signal as a reference clock, and writing means for writing the encoded recording information on the recording medium.

[0008]

[EMBODIMENT OF THE INVENTION] An embodiment of the present invention are described with reference to FIG. 1. In FIG. 1, reference symbol 1 refers to a recording medium

having optical track servo pattern information, and is provided with an intermittent optical channel at a predetermined track spacing. Reference number 2 refers to a spindle motor for rotatably driving the recording medium. Reference number 3 refers to an optical pickup as a detecting means for detecting optical track servo pattern information on the recording medium, and may comprise a laser, lens, photodetector and the like. A servo signal detected by the optical pickup 3 is used for track positioning control mainly by a magnetic head position control circuit 4.

[0009] When the recording medium 1 is rotatably driven by the spindle motor 2, the servo signal on the recording medium 1 is detected by the optical pickup 3. This servo signal is input through a comparator 5 to a PLL circuit comprising a phase/frequency comparator circuit 6, VCO 7, and frequency divider circuit 8. A clock synchronized with the servo signal detected by the optical pickup 3 is generated by this PLL circuit, and is supplied to a coding circuit 9 as a reference clock at the time of writing.

[0010] The coding circuit 9 encodes recording information sent from a CPU 10 based on the reference clock, and sends the encoded recording information to a write amplifier 11. The recording information amplified by the write amplifier 11 is sent to a magnetic head 12 and written to the recording medium 1. Accordingly, the digital signal corresponding to the recording information synchronized with the servo signal detected by the optical pickup 3 is written to the recording medium 1 by the magnetic head 12.

[0011] According to this structure, for example, in a state wherein the rotation speed of the spindle motor 2 is slower than a predetermined number of rotations, the detection signal of the optical pickup 3 and the reference

clock sent to the encoding circuit 9 are both delayed, and as a result, the speed of writing to the recording medium 1 is also decreased. Conversely, in a state wherein the rotational speed of the spindle motor 2 is faster than a predetermined number of rotations, the speed of writing to the recording medium 1 is increased.

[0012] In this way, the writing speed changes by tracking a change in the rotational speed of the recording medium. Accordingly, a digital signal corresponding to the recording information can be written on the recording medium at predetermined spacing without managing the relative speed of the recording medium 11 and the magnetic head 12 at a predetermined speed.

[0013]

[EFFECT OF THE INVENTION] The magnetic recording method and device of the present invention provides a magnetic recording device having a simple structure and low cost, which is capable of writing digital signals on a recording medium at predetermined spacing without a drive mechanism and drive control circuit having complex structures.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[FIG. 1] is a block diagram showing the circuit structure of the optical tract servo-type magnetic recording device of an embodiment of the present invention.

[EXPLANATION OF SYMBOLS]

- 1 Recording medium
- 2 Spindle motor
- 3 Optical pickup
- 4 Magnetic head positing control circuit
- 5 Comparator
- 6 Phase/frequency comparator circuit
- 7 VCO
- 8 Divider circuit

- 9 Encoding circuit
- 10 CPU
- 11 Write amplifier
- 12 Magnetic head

